Wireless Strategies Inc.

Ex parte Meeting

NPRM WT Docket 10-153

April 5, 2011

Agenda

- The Broadband Problem
- Debunking the Myth that there is an Incentive to Use More Transmitted Power than Necessary
- Legacy Systems Inefficiently Use Spectrum and are Choking the Airwaves
- Proof that Auxiliary Stations will not cause interference when deployed under the FCC's Proposed Regime
- Benefits from the use of Smart Antennas
- The OEM Communications LLC Diversion
- Adaptive Modulation Effectively uses Spectrum
- Summary and Conclusions
- Recommendations

The Broadband Problem

Many communities are Unserved or Underserved with Broadband because with Existing Technologies it has been Uneconomical to Provide Broadband Service to those Communities.

The FCC's Response

Proposed Innovative Ways to Increase the Effective Use of Spectrum and Lower the Cost of Backhaul and Access (NPRM 10-153).

The Response of Comsearch[1]

Offers NO SOLUTION.

Proposes maintaining the Status Quo[2].

1. Comsearch ex parte presentation re WT Docket 10-153, March 11, 2011
2. Their reasons/fears:
   - Innovative solutions increases frequency coordination complexity.
   - Innovation may lead to abuse of the Rules [although there is no incentive to do so and therefore no likelihood of abuse]

Debunking the Myth that there is an Incentive to Use More Transmitted Power than Necessary

Debunking the Myth that there is an Incentive to Use More Transmitted Power than Necessary

The Rules Protect Authorized (Licensed) Receivers

§ 101.103 Frequency coordination procedures.

(a) Assignment of frequencies will be made only in such a manner as to facilitate the rendition of communication service on an interference-free basis in each service area. Unless otherwise indicated, each frequency available for use by stations in these services will be assigned exclusively to a single applicant in any service area.

TSB 10-F Annex G. Interference analysis of a new applicant station is required within 125 miles, 250 miles within 5 degrees of the main beam azimuth.

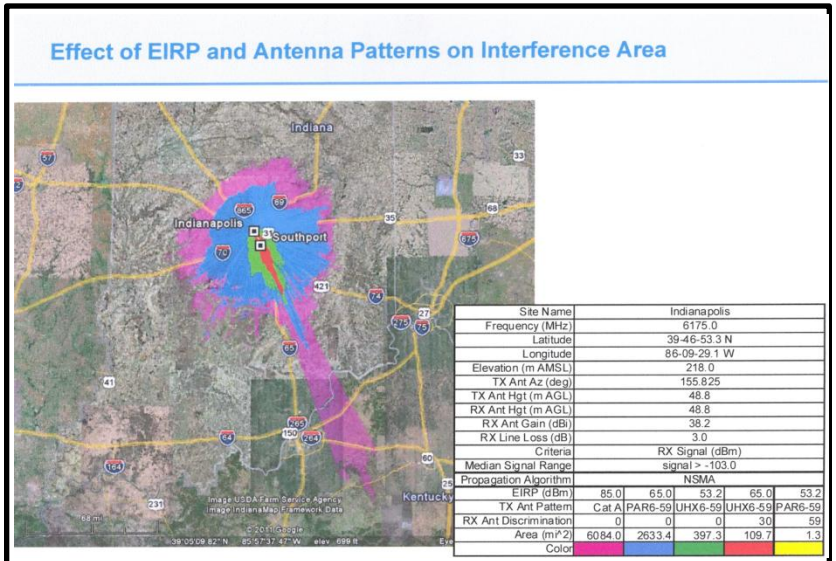
Debunking the Myth that there is an Incentive to Use More Transmitted Power than Necessary

❖The Rules have a built-in strong disincentive against the use of more power than is necessary to achieve the desired communications as a New Applicant must first Prior Coordinate.

❖What this slide shows is that the higher the EIRP the more difficult it is for a new applicant to successfully prior coordinate.

❖The higher the EIRP the Higher the Cost to the New Applicant.

❖Comsearch shows a plot with an EIRP of 85dBm with a CAT A antenna (gain 38dBi). This would require a transmitter output power of 47dBm. To the best of WSI's knowledge there are no digital radio manufacturers who build a linear power amplifier with an output capability of 47dBm .



Comsearch ex parte meeting March 11, 2011

What the slide does show is the coordinated but unused (wasted) EIRP around an authorized station.

New Applicant Interference = New Applicant EIRP – Path Loss + Victim Antenna Gain – Cable Loss

Authorization of a New Application for FS has NOTHING to do with an Existing Station's EIRP

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TSB 10-F Annex G.

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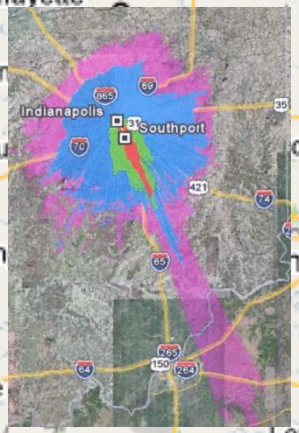
Boundary within which a New Applicant must not cause interference to an existing station's receiver



EIRP 85dBm

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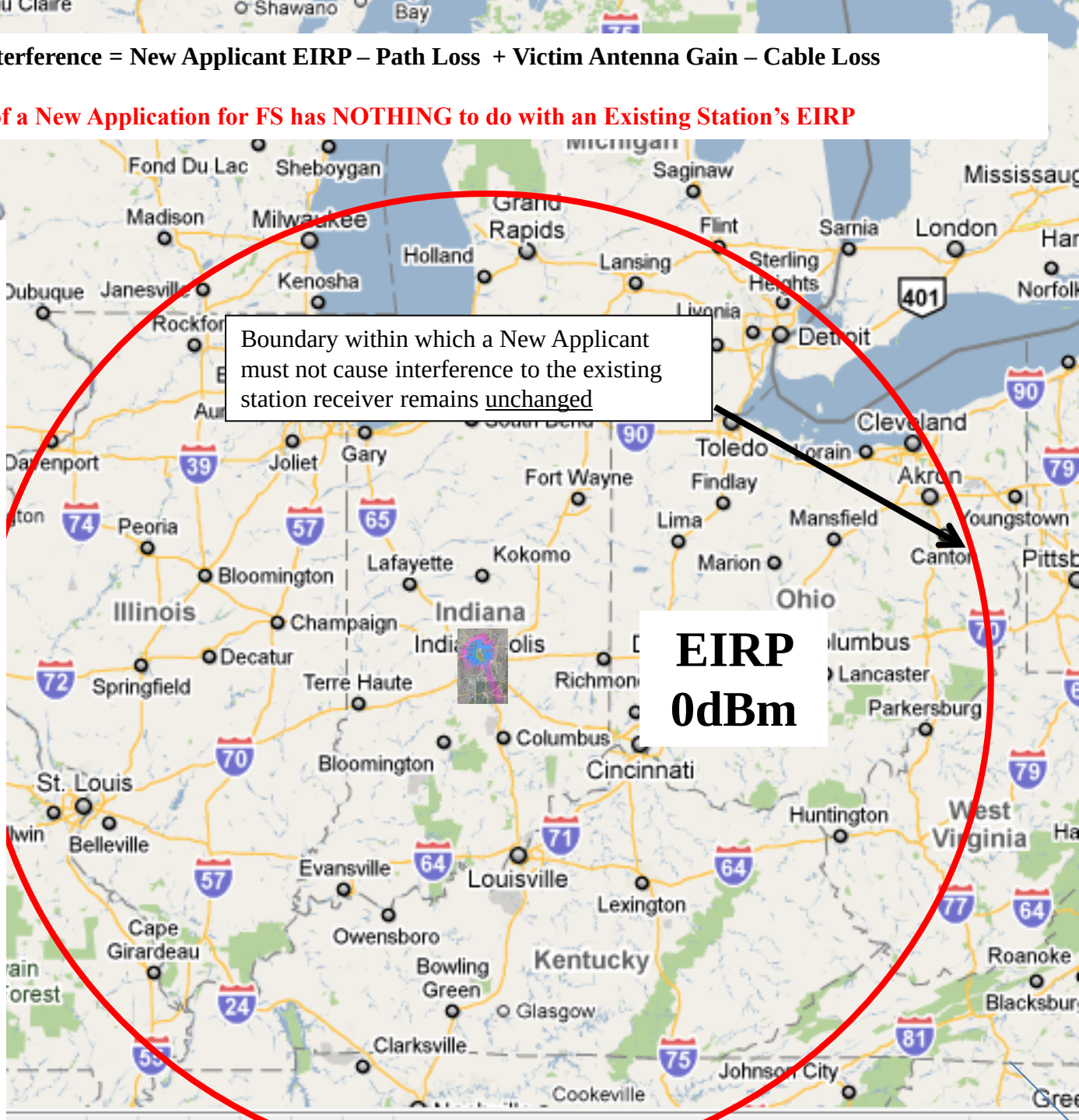

Debunking the Myth that there is an Incentive to Use More Transmitted Power than Necessary

Conclusion

The proposition by Comsearch and other obstructionists that New Applicants who plan on deploying Auxiliary stations would be "… encouraged to use unreasonably high EIRP" is simply a "Fairy Tale," a "Scare Tactic."

Legacy Systems Inefficiently Use Spectrum and are Choking the Airwaves

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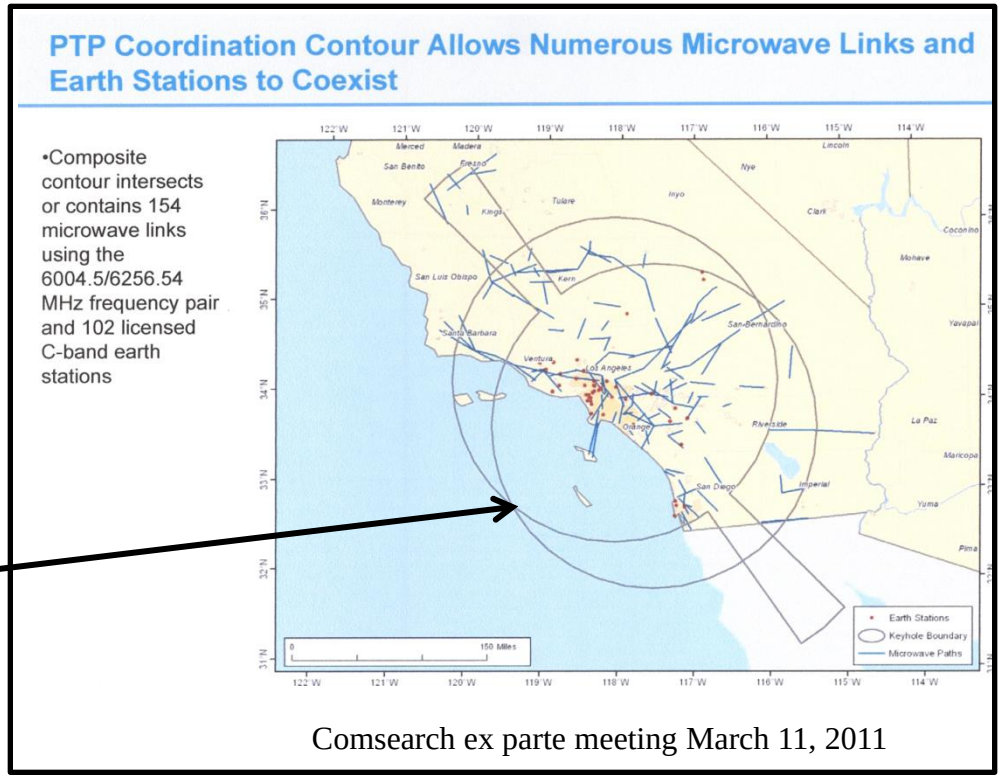
Misleading Slide

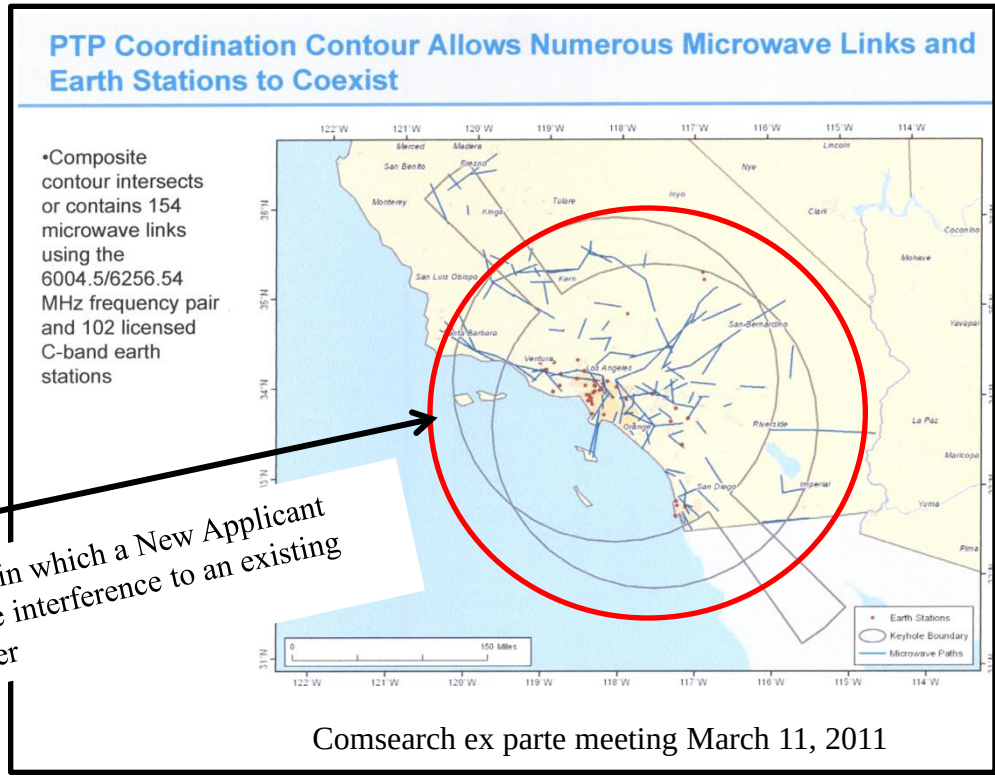
The "Key Hole" boundaries are misused in this diagram as they are the boundaries for new applicant stations not authorized stations.



Legacy Systems Inefficiently Use Spectrum and are Choking the Airwaves

TSB 10-F Annex G.
"Interference analysis of a new applicant station is required within 125 miles, 250 miles within 5 degrees of the main beam azimuth."

Every one of the 308 stations within this boundary have the potential to block new applicant paths within 196,350 square miles of its receiver.



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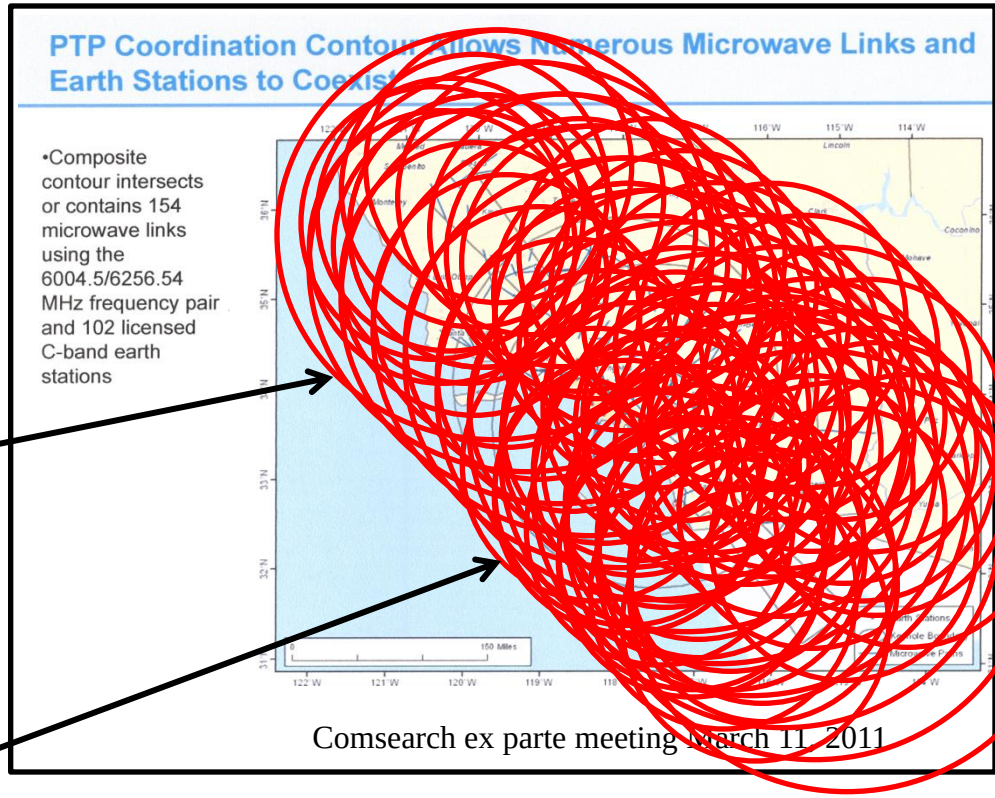


Every one of the 308 stations block and/or will block Millions of New Applicant Paths.

FDD Microwave with Dumb Antennas were designed for Last Century Low Density Symmetrical Voice Traffic where a density of one station every 245 sq. miles is considered good by Comsearch. However, today, 4G and Broadband Access requires a density of 100 times to 1000 times the outdated Last Century density models.

Legacy Systems Inefficiently Use Spectrum and are Choking the Airwaves

Conclusions

There has been more innovation in mobile microwave in the last four years than there has been in Fixed Service microwave in the Last Forty Years. There are compelling reasons for Change to meet the new demands on Backhaul and Access.

- If obstructionists are continually allowed to stifle innovation and prevent Fixed Service microwave technology from catching up with the same magnitude of innovation as in mobile microwave, then the airwaves will become more and more congested and the opportunity to rapidly bring broadband to 95% of the population will be lost.

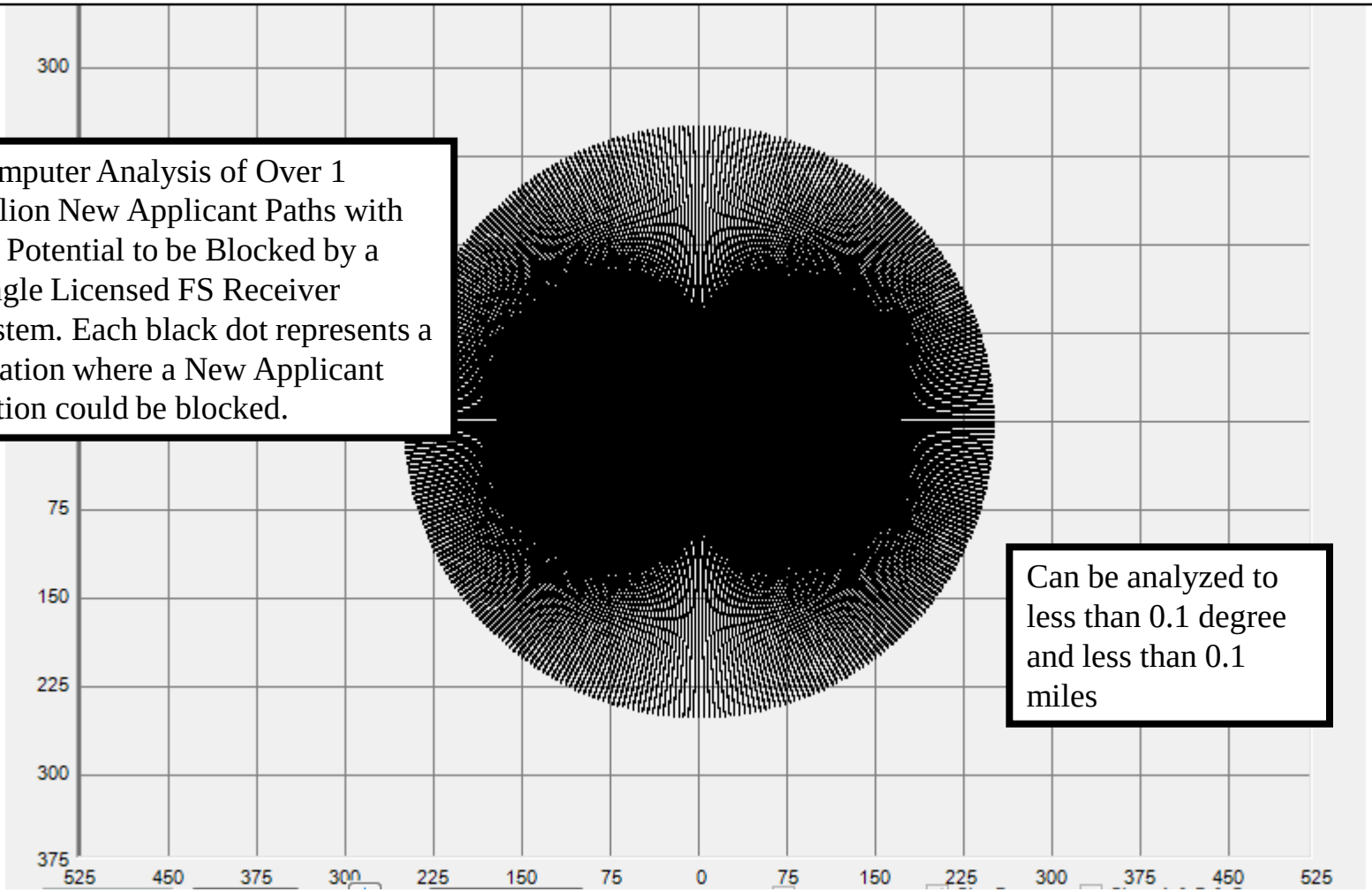
- Networks Operating in the Time, Frequency and Space Domains with Smart Antennas and Auxiliary Stations can serve the market requirements with only one 30MHz Channel Pair with a channel payload increase of over 800%, prevent the blockage of millions of New Applicant paths and at a cost 90% less than a Legacy Network.

Proof that Auxiliary Stations will not cause interference when deployed under the FCC's Proposed Regime

Proof that Auxiliary Stations will not cause interference when deployed under the FCC's Proposed Regime

There are Locations Around Every Authorized (Licensed) Station where a New Applicant's Primary or Auxiliary Station May or May Not Coordinate

Computer Analysis of Over 1 Billion New Applicant Paths with the Potential to be Blocked by a Single Licensed FS Receiver System. Each black dot represents a location where a New Applicant station could be blocked.

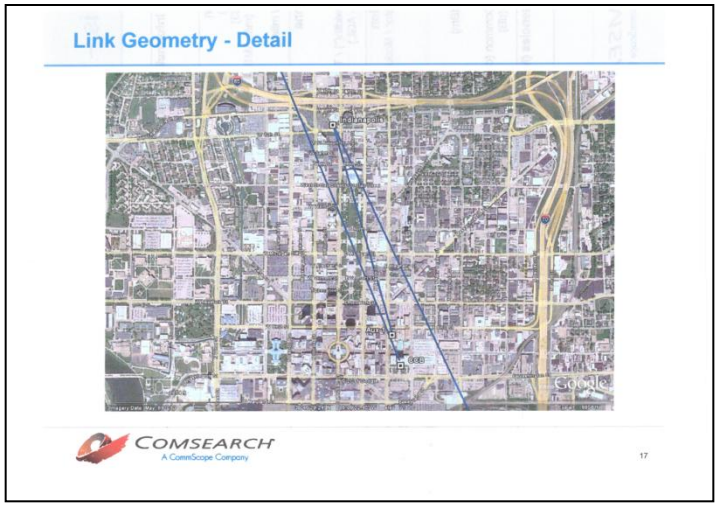


Can be analyzed to less than 0.1 degree and less than 0.1 miles

Proof that Auxiliary Stations will not cause interference when deployed under the FCC's Proposed Regime

There are Locations Around Every Authorized (Licensed) Station where a New Applicant's Primary or Auxiliary Station May or May Not Coordinate.

Comsearch, in Slides 23 – 28 of their March 11, 2011 ex parte presentation , went to great lengths to describe a scenario where an Auxiliary Station would not Coordinate. So what was their point? WSI could change the scenario so the Auxiliary station would coordinate, but it would serve no meaningful purpose.



Contradicting their previous statements re the difficulty of analyzing Auxiliary stations, Comsearch clearly shows that the regime for the coordination of Auxiliary stations as proposed by the Commission will prevent Auxiliary stations from causing harmful interference and that Comsearch has the tools and ability to provide coordination and protection services for primary stations and auxiliary stations.

Proof that Auxiliary Stations will not cause interference when deployed under the FCC's Proposed Regime

Conclusion

Auxiliary Stations will not cause interference when deployed under the FCC's Proposed Regime.

Benefits from the use of Smart Antennas

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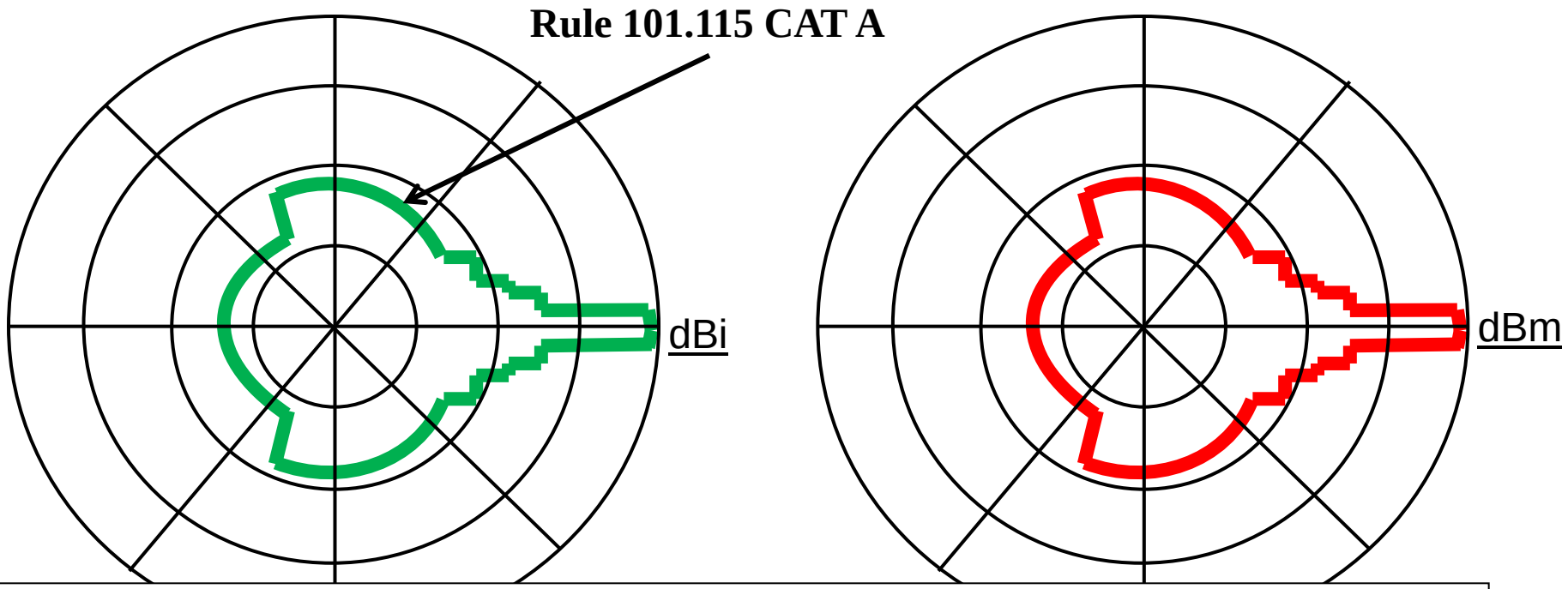


The Difference Between Antenna Gain and EIRP

Directional Antenna Gain

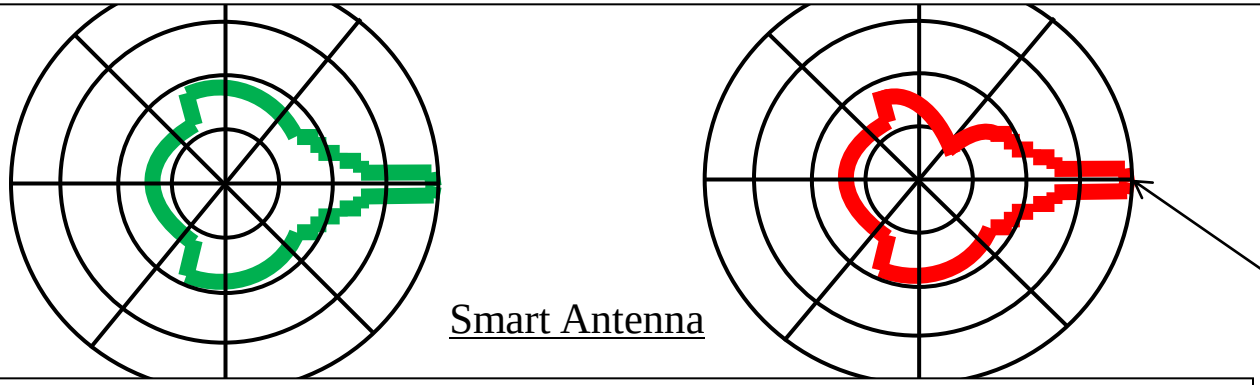
The gain of a directional antenna at any angle as compared to the gain of an isotropic antenna expressed in dB above isotropic (dBi)

Equivalent Isotropically Radiated Power

The product of the power to the antenna and the antenna gain in a given direction relative to an isotropic antenna usually expressed in dBm.

Benefits from the use of Smart Antennas

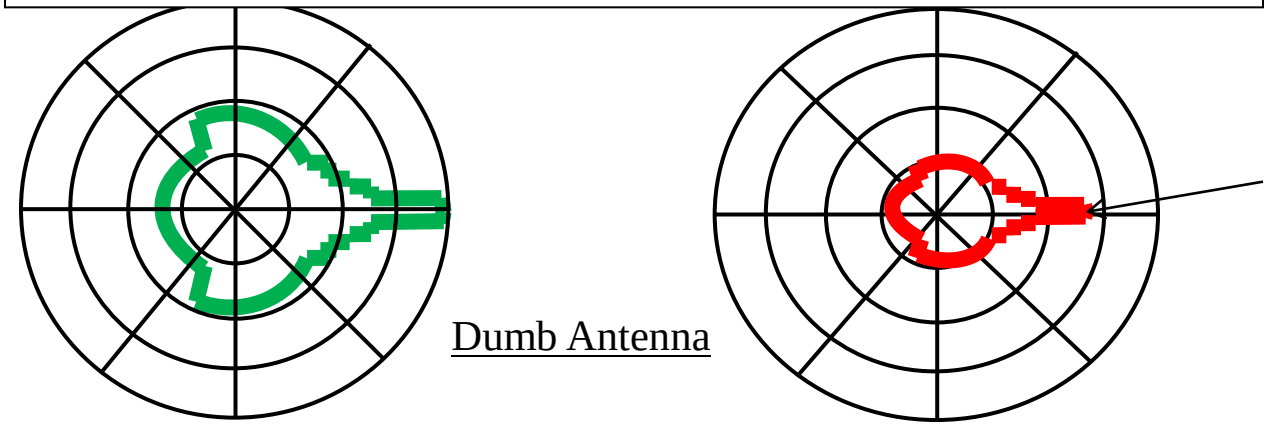
Prior Coordination shows that the EIRP must be reduced by 20dB at 40 degrees



Smart Antenna

Min power necessary for desired communications remains unchanged

The Difference Between Smart and Dumb Antennas



Dumb Antenna

20dB below the min power necessary for desired communications.
Forced to use another frequency channel pair as it would require a very large ultra high performance dish that exceeds the tower wind loading.

No change in antenna pattern

Log Polar Plot of Antenna Gain dBi **Log Polar Plot EIRP dBm**

Benefits from the use of Smart Antennas

Conclusion

Smart Antennas, when used in a TDD-TDMA Network, Conserve Spectrum and Dramatically Lower Costs; making it Economically Viable to provide Broadband to Unserved and Underserved communities, which is the Goal of the National Broadband Plan and NPRM WT Docket 10-153.

The OEM Communications LLC Diversion

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Comsearch, in their ex parte presentation of March 11, 2011, included reference to a PCN issued on behalf of OEM Communications LLC ("OEM") on October 15, 2010 on the incorrect assumption that OEM was planning a primary network that could be used with auxiliary stations and that OEM planned to "block" future applicants by using excessive EIRP levels of 84.7dBm.

Comsearch's assumption regarding the planned use of auxiliary stations is false, as is their statement that EIRP that has the potential to block New Applicants and that OEM plans to use an EIRP of 84.7dBm.

The facts are that OEM plans to use a single 11GHz channel pair in a hub and spoke configuration with Cat A smart antennas at the hub, and CAT B antennas at licensed stations at the spokes. The PCNs show a maximum EIRP of 62dBm, less than the national average EIRP of 68dBm

The fact is, OEM is putting to productive use innovative technologies necessary to meet the goals of the National Broadband Plan. Comsearch and others are trying to stifle innovation.

The OEM Communications LLC Diversion

Conclusion

The OEM Diversion is erroneous and has no place in this proceeding.

Adaptive Modulation Effectively uses Spectrum

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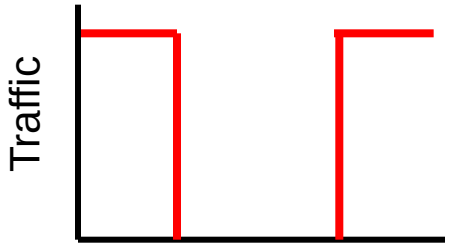
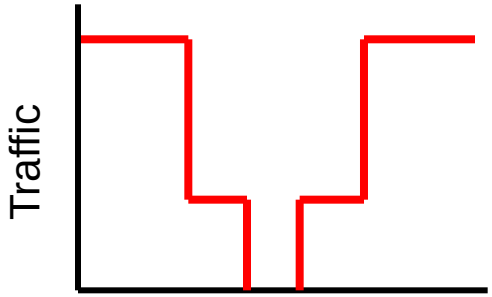
Performance over a given path



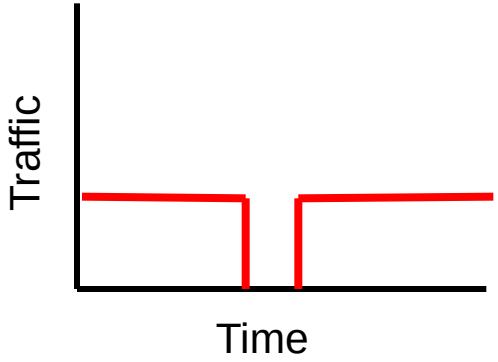
Non-Adaptive Mod 64QAM.

Compliant with the Rules and Nobody Complains.



Adaptive Mod 64QAM/QPSK

Compliant with the Rules and Traffic Thru-put Increased. Luddites Complain.



Illegally Forced into QPSK Mod.

Nobody would want to buy/use as the Traffic Thru-put would be reduced by 80% for the same cost. Moreover, if for the first time the Commission unnecessarily imposed an unrelated quality of service requirement (99.999% path availability) as proposed by Comsearch, microwave broadband service to many un-served and underserved communities would be denied.

Adaptive Modulation Effectively uses Spectrum

Conclusion

Radios with Adaptive Modulation are compliant with the Rules and Benefit the Licensed Operator.

Summary and Conclusions

- FDD Microwave with Dumb Antennas were designed for Last Century Symmetrical Voice Traffic with Low Path Density Deployments. However, today, 4G and Broadband Access requires a density of **100 times** to **1000 times** that of outdated Last Century path density models.

- Networks Operating in the Time, Frequency and Space Domains with Smart Antennas and Auxiliary Stations can serve the market requirements with a channel payload increase of over 800%, prevent the blockage of millions of New Applicant paths and lower Backhaul and Access costs by 90%, making it possible to meet the goals of the National Broadband Plan and WT Docket 10-153 of rapidly bringing cost effective broadband to 95% of the population .

- **If obstructionists are continually allowed to stifle innovation, then the airwaves will become more and more congested and the opportunity to rapidly bring broadband to 95% of the population will be lost.**

Recommendations

- The Commission is respectfully requested to immediately issue a Final Report and Order permitting the use of Auxiliary Stations as Proposed in the NPRM, and confirm the use of Adaptive Modulation without any stifling and unnecessary rule changes proposed by Comsearch and others.